



# *How to Sharpen*

NORTON



PIKE



ESTABLISHED 1823

A Book for the Mechanic, the Farmer,  
the Handy Man and the Student

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# How to Sharpen

A Book for the Mechanic,  
the Farmer, the Handy Man  
and the Student



## *The Big Truth*

Don't begrudge the time you put on tools with your oilstone. You will make it up quickly. Oilstoning cuts costs and makes better work. *Every edged tool needs oilstoning often.*



The information contained in the following pages regarding the general care and use of sharpening stones is based on the experience of expert mechanics and can be depended upon in every respect. In the Norton Pike line may be found a stone of the right grade or grit for every kind of cutting edge. We feel, therefore, we can advise you impartially and to your best interest, as our one desire is to be sure you secure the stone most suitable for your work.

Remember, whether your needs call for a natural stone such as Arkansas, or Washita, or whether an artificial stone like the Norton Pike India best meets your purpose—you will find the *right* stone in the Norton Pike line which for more than a century has upheld its superiority in quality, value, service and satisfaction.

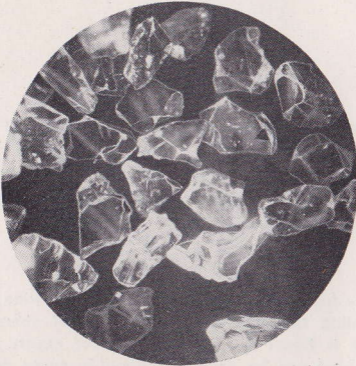


## *How to Select a Stone*



### *What Sharpening Means*

It is not merely the friction between the stone and the steel that brings the latter down to an edge. Sharpening means *cutting*.



*Magnified View of Sharpening Stone Crystals*

Every sharpening stone is a mass of minute crystals—infinately sharp little cutting points, each of which is harder than steel.

The coarseness or fineness of these crystals, their hardness and their brittleness or toughness—these are the things which, in various combinations, mark the differences between the several kinds of sharpening stones, making one kind better for its own purposes than another.

You would not think of sharpening a razor on a scythestone. The scythestone and the razor hone are the two extremes. Between them lie the various

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stones used in shops, as well as on the farm and in the home.

The first thing, of course, to consider is the purposes for which the stone is to be used—whether a fast-cutting stone will be more useful to you than a slow-cutting stone that gives a finer edge.

This question answers itself as soon as you know, first, that the coarser grit a stone has the faster it cuts and, second, that *cutting edges* are classed in three groups—coarse, medium, and fine.

This does not mean that a coarse edge is not a sharp edge. The ideal edge for your very best carving knife, for instance, is a “coarse” edge—best because such an edge will do this work *perfectly*, and because to take extra time to get a finer edge on a slower-cutting stone would mean just so much time put in needlessly.

### *Coarse-Edged Tools*

Practically all of the tools in the coarse-edged group are *knives*. One of the reasons why these do not require a fine edge is the fact that knives are always used with a diagonal, or a sawlike motion. This adds to the cutting efficiency, and at the same time the slight coarseness of edge, in its turn, adds to the sawlike effect, again making the cutting easier. These tools include canvas-cutters' knives, carpet knives, carving knives, bread knives, paring knives and kitchen, household and farm knives of all kinds, including scythes and sickles, but *not* including *tools*. Some of these knives require a finer edge than others; but all can be given the best edge for their work on a coarse stone.

### *Medium-Edged Tools*

Medium-edged tools require more smoothness than a coarse edge affords, but yet do not need

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extreme fineness. Such are the tools used by most mechanics—more particularly the broad, beveled tools, like chisels, planes, draw knives and others used by carpenters and wood-workers.

The logical inference would be that to secure a medium edge one should use a stone of medium grit. This is not entirely correct. The heavy sale of medium-grit stones is due chiefly to the natural desire of the average mechanic to secure both a fast-cutting and fine enough edge from one stone. Except for special uses, the more satisfactory way is to use a *coarse* stone for rapidly cutting the edge down until it is ready to finish, and then to finish on a *fine* stone to whatever degree of fineness is desired. For this reason, a *Combination Stone*, which unites a coarse stone and a fine stone, is usually more useful than a medium stone. Combination stones are becoming more and more popular among mechanics as well as in homes and on the farm.

### *Fine-Edged Tools*

The tools and instruments in this group are without exception, used for highly specialized purposes. They never find a place in the home or on the farm. They are used in the professions, notably by the surgeon and the dentist, also by the scientist in preparing specimens for the microscope. They are also used by the metal engraver, by the furrier and by most workers in leather, such as harness-makers and shoemakers. Such edges when quite dull are usually brought down to comparative sharpness on a fine-grit stone, such as Norton Pike India but the finishing touches are generally given on an Arkansas stone.

### *Special Shapes*

In many trades peculiarly shaped tools make it

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necessary to use sharpening stones having special shapes. Many of these shapes are illustrated on pages 29 and 30.



### *Natural and Artificial Stones*



#### *Explanation of Difference*

Natural stones include those which are taken directly from the earth and, without undergoing any change of structure, are manufactured into convenient shapes for mechanical purposes. Artificial stones, on the other hand, consist of certain basic materials which in the course of manufacture undergo some chemical change whereby an entirely new material is created, after which it is crushed, graded, and molded into proper shapes and baked under intense heat in kilns or ovens. Recent advances in the hard, sharp artificial stones of today have been the result of the necessity for developing a product which would take care of modern improvements in the hardening of tool steel. It can be stated, however, that there are a number of sharpening requirements for which natural stones are unequalled.

#### *Electric Furnace Abrasive*

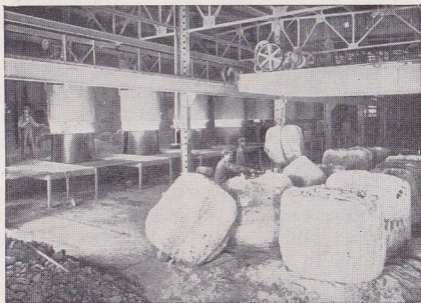
By scientists, the production of Artificial stones is regarded as a triumph of the first order. It means the making by man of rock crystals which are harder than anything in Nature except the pure diamond. The titanic magnitude of the operation may be partly understood when it is said that these crystals require for their making a tem-

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perature running at times as high as 6000 to 7000 degrees of heat—a temperature made possible only by the use of great electric furnaces. There are now two important types of Artificial oilstones on the market; one is known chemically as Carbide of Silicon and the other as Aluminum Oxide. The best known form of Aluminum Oxide is Norton Alundum abrasive which is a reproduction of the natural mineral Corundum; which, in turn is closely related to the Ruby and Sapphire. When made into oilstones this artificial electric furnace material is known as Norton Pike India.



*Electric Furnaces Showing Pigs  
of Alundum Abrasive*

### ***Artificial Stone Advantages***

One of the chief advantages of Norton Pike India is the absolute uniformity which it is possible to impart to the coarseness or fineness of the crystals. Since, as stated, the degree of coarseness is one of the prime considerations in choosing a stone, it becomes a matter of real importance to



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be able to *control* this, and thus to secure a perfect stone with either coarse, medium or fine grit.

A second advantage is the unvarying hardness and texture throughout the stone, due to the scientific "bonding" together of the crystals. This makes it possible to avoid absolutely all hard or soft spots or other defects, as well as enabling the user of a Norton Pike India stone to buy a new stone of the same grit with the certainty that it will be precisely a duplicate of his former stone.

Norton Pike India stones are superior to other Artificial stones, first, in the fact that their chemical composition *never varies* in the slightest; and, second, in the fact that in no other stones have the important problems of perfect "bonding" been so successfully worked out.

### *Superiority of India*

The peculiarity of Carbide of Silicon Stones is that they cut fast but are very brittle. Hence, while stones made from this material are useful on work wherein it is desirable to have a rapid breaking down of crystals, they are not so valuable for regular shop use, since they wear down too rapidly to hold their shape satisfactorily.

Aluminum Oxide or Alundum Abrasive crystals, on the other hand, from which Norton Pike India is made, are so extremely *tough* that, while they do not lose in fast-cutting quality, they stand up under even the hardest service.

Hence, Norton Pike India stones hold their shape almost indefinitely. There is no steel too hard for them to sharpen quickly, nor hard enough to cause them to groove or wear down unevenly if properly used.

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Being made in three grits—coarse, medium, and fine—there is no ordinary class of sharpening of which they cannot take excellent care.

It is this unique combination of *toughness* with extreme *hardness* — this *fast-cutting* quality coupled with the ability to always *hold its shape*—that makes Norton Pike India the most widely useful sharpening stone known.

This is why in the great machine shops, one after another, Norton Pike India displaces all other sharpening stones as fast as it is introduced. This is why carpenters, wood-workers and other mechanics prefer it and why we prefer to recommend it for every farm and household use.

Another exclusive feature of Norton Pike India Oil Stones is that they are oil-filled by a process which gives them *remarkable freedom from glazing*. This makes them ready for use with only a slight application of oil and avoids the necessity of soaking them for days in oil.

### *Natural Stones*

In spite of these superiorities of Artificial stones, there are some Natural stones that hold their places as firmly as ever. One of these is that famous stone known to every user of extremely keen tools—Arkansas. For many years, the only quarries in the world extensively producing a high, even quality of Arkansas have operated exclusively to produce Norton Pike Arkansas. Norton Pike Arkansas, therefore, represents the choicest selection of such stones.

### *Hard Arkansas*

No other stone, Natural or Artificial, approaches this for its particular purpose which is to sharpen tools requiring the very finest edges, such as are

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used by surgeons, engravers, wood and ivory carvers, dentists and many others. Hard Arkansas is sixteen times harder than marble, and has a finer grit than any other oilstone, hence imparts the smoothest edge. Owing to the very limited supply of good Arkansas rock, and to the great difficulty in quarrying and manufacturing (about 90% being waste) it is necessarily very high priced.

### *Soft Arkansas*

This stone is more porous than the Hard, and a little coarser, hence does not impart so fine an edge. It cuts faster and is better for some work, especially for file makers, pattern makers and workers in hard wood. It is preferred by sheep shearers on great ranches in all parts of the world.



*Arkansas Quarry Scene*

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### *Washita*

Washita stones have always been favored in carpenter, woodworking and cabinet making shops. While slower cutting than Artificial stones they will always be popular due to the fact that they give a smooth, long-lasting edge. There are several grades, "Lily White" being the best selection.

### *Other Pike Stones*

Among other Natural Norton Pike stones are the Queer Creek, Hindostan and Sandstone. These stones fit perfectly into certain sharpening operations. The Queer Creek gives the desired edge on the knives used by the native workers on the rubber plantations of the world. It is also the right grit for hackers used in the turpentine forests of the South. Hindostan is popular in the packing house industry, while Sandstone is used where a rough, coarse edge is desirable.



## *How to Sharpen*



One rule that has very wide application in using cutting tools is to sharpen against the edge.

With two exceptions, all kinds of sharpening (both on grinders and oilstones) are performed with the edge of the tool working *against* the stone. The exceptions are: (1) when sharpening on leather, as with a razor strop; (2) when the tool itself is held still while the whetstone or oilstone is mov-

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ed to do the sharpening—as in sharpening a scythe or sickle with a whetstone or in sharpening the inside of a gouge or other concave edge with an oilstone slip. The reason for sharpening against the edge is that this results in less “wire edge.”

Broadly speaking, there are only two ways of sharpening tools or knives:

1. By means of a grinding wheel, as in the old-fashioned grindstone or the more modern tool grinder.

2. By rubbing or whetting the tool on some one of the many shapes and styles of oilstones, hones or whetstones.

There is no type of hand-tool for which you will not find either a Norton Pike tool grinder or sharpening stone that is perfectly adapted to give you best results. Let us discuss first the reasons for sharpening on grinding wheels.

### *Grinding Wheels*

Grinding wheels have two enormous advantages: First, they cut steel fast; second, they give the tool a *concave* or hollow ground bevel. This does not mean, however, that grinding wheels can take the place of sharpening stones, the use of which is explained further on.

Now about bevels: Look at the illustrations. The dotted line represents the flat surface of an oilstone or a hone.

Fig. 1 shows a cross section of a hollow ground razor. Properly, all hand tools and knives must be



Fig. 1

sharpened on this same “Hollow Ground” principle to do their best work. It is hard to see this in a knife, but easy to see it in any tool with a broad bevel, such as a chisel or draw-knife.

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Fig. 2 is exaggerated a little to show how exactly like the razor is the *correctly* ground bevel of a chisel—both are *concave*. This concavity comes from the curve of the grinding wheel.

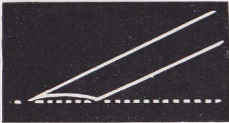


Fig. 2

by not holding the tool *in one unchanging position* on the grinding wheel.

One object of the concavity is that it makes a *thinner* shaped wedge, hence enters wood, etc., easier than does the straight bevel.

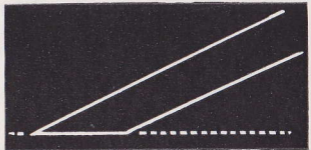


Fig. 3

Another object is that this hollow ground bevel will last much longer than will a bevel like that shown in Fig. 3. Here

is the reason for this: Fig. 4 and Fig. 5 show the hollow ground chisel and the straight ground chisel after they have been sharpened several times on the oilstone.

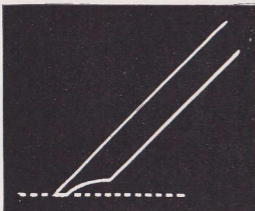


Fig. 4

for some time. But the other (Fig. 5) is now *convex* — it works hard and slow. It should go

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to the grinder right away. It needs grinding much *oftener* than the chisel in Fig. 4.

The same thing is true in all other tools—even in butcher and carving knives. The *properly ground* tool will cut better and need less frequent sharpening.



Fig. 5



### *The Use of Stones*



Grinders give the correct *bevel*, but it takes the *flat* surface of an oilstone or hone to put on the finishing touches of a keen, lasting edge.

Many people lay a blade on an oilstone and proceed to sharpen it by a *circular* or *rotary* movement. With a pocket knife or other short blade, this will put on an edge in time. But straight strokes sharpen more quickly. Moreover, in the case of chisel-like tools this rotary motion constantly changes the angle at which the tool is held and prevents the edge from being true.

#### *Chisel-like Tools*

By far the greater number of the cutting tools in common use are of the chisel type. These instructions, therefore, apply with slight variation to chisels, plane-irons and all tools of this general pattern.

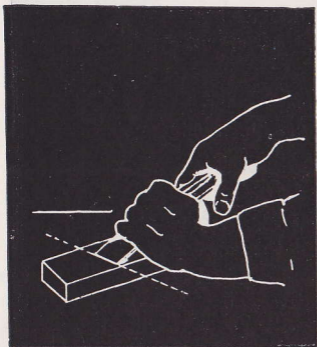
A tool of this type shows its dullness in the form of a thin white, or bright, line along the edge.

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Until the bevel-edge has become so obtuse as to need grinding (as explained before), this dullness is properly removed on the oilstone. The test of sharpness is the disappearance of the thin bright line.



*Fig. 6*

First see that the oilstone lies perfectly level to insure a true edge. Apply a few drops of oil to the stone and grasp the tool as shown in the illustrations, Figs. 6 and 7.

Note that there is no side-wise turn in the right wrist. Any twisted or turned position in

this wrist is sure to give a certain amount of rolling or twist to the tool, thus impairing a true sharpening angle. Swing the right arm from the shoulder, bending it only at the elbow and holding the wrist rigid. Place the edge at an oblique angle across the face of the stone, as shown by the dotted lines, and rub backward and forward, bearing down with both hands.

If the bevel has been recently ground, hold the hands low to make the oilstone bevel correspond with the grinding bevel. With each sharpening it is necessary to hold the hands a trifle higher until, finally, the oilstone bevel becomes



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too obtuse, when the tool must again go to the grinder. In rubbing over the stone move the hands *horizontally* — parallel with the stone — instead of giving them a dipping or scooping motion, as this latter tends to round the edge of tool and make the stone hollow out. For the same reason, it is important to use, as much as possible, the entire face of the stone, rubbing the tool over the entire length and occasionally turning the stone end for end.

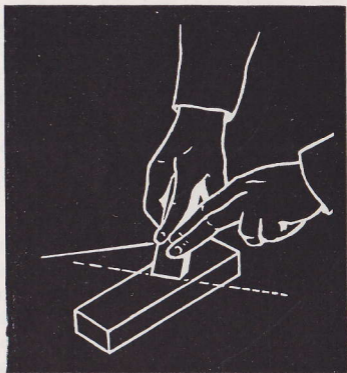


Fig. 7

When, after wiping the tool clean, you find the thin line of dullness has entirely gone, turn the tool over, *keeping it PERFECTLY FLAT* on the stone, and with one or two light, side-wise strokes remove any burr or wire edge.

The bevel angle on a chisel or gouge varies according to whether the tool is to be used regularly on hard or soft wood. A long, acute angle does not afford as much strength as does a more obtuse one. Hence, men who work in hard woods use tools that would seem to workers in soft woods to have a rather blunt bevel.

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The bevel on a framing or mortising chisel must, of course, be more obtuse than that on a paring, or "firmer," chisel for the reason that in the latter there is not so much need for strength.

### *Curved Edges on Plane-Irons*

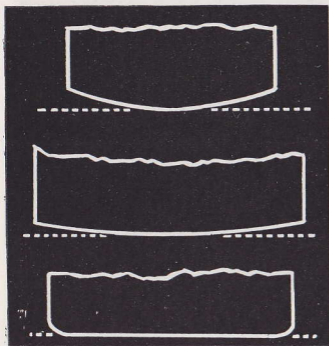


Fig. 8

straight except with a slight turning up of the corners. On all other planes, the edge is entirely straight.

### *Sharpening a Draw-Knife*

Place the tool, bevel uppermost, with one handle flat on the bench and the other projecting over the edge so that you can grasp it firmly in the left hand. With the oilstone in the right hand, run it over the bevel, back and forth in an end-to-end direction, as in this way it is more easy to steady the stone and hold it true to the proper angle.

To avoid leaving marks of the plane on the wood, the plane-iron should be ground to fit the tool in which it is used. (See Fig. 8.) For a single-iron jack-plane the edge should be rounded; for ordinary jack-planes, slightly rounded and for smoothing, panel and trying planes,

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### *Gouges and Irregular Edges*

For good work, the bevel on a gouge must follow the curve of the tool. For this reason, it is necessary to give the gouge a rock-

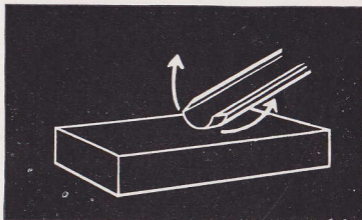


Fig. 9

ing motion from side to side as it passes back and forth over the stone. (See Fig. 9.) The same is true in grinding. Hold the length of the gouge, not parallel with the face of the wheel, but at right angles so that the bevel is ground sidewise and rock the entire surface of the bevel back and forth on the face of the wheel. In Fig. 10, A shows the result of good, accurate sharpening, while B indicates the irregular bevel-angle caused by attempting to sharpen a gouge without enough of the rocking movement.

To take off the wire edge from the inside, hold the gouge firmly against the bench and gently rub with a round-edge oilstone "slip." Be very careful to hold this flat against the inside of the groove to avoid turning the edge of the tool.

Gouges and other irregular shaped tools with the bevel *inside* are likewise sharpened by holding them firmly against the bench while an oilstone

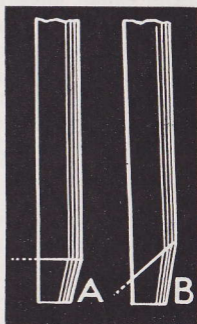


Fig. 10

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“slip” of the right shape is rubbed against the bevel.

The two previous paragraphs explain why it is desirable to have several slips of different shapes and sizes.

### *Power Oilstones*

The recent invention of electrically driven oilstones has taken much of the tedious work out of the hand oilstoning operation. One type of these most modern devices is described on page 47. The general directions given in this book for oilstoning various tools hold good for power oilstones; except that the tiresome job of rubbing back and forth on a hand bench stone is eliminated.

### *How to Sharpen Knives*

As stated, knives are like the chisel type of tools in that they cut better if sharpened so as to retain the wedge-form. The wedge-like angle, however, is not the main bevel extending from the back of the blade down to the edge. If it were, the whole blade would have to be held flat on the grinder wheel and this would soon grind the blade down to such thinness as to rob it of rigidity and strength. The wedge-like angle, or cutting bevel, extends back from the edge only a very short distance—rarely more than an eighth of an inch even on a large knife. Often this bevel can hardly be seen.

This means that, on the grinder as well as on a Knife Sharpener, or an oilstone, the blade is applied with its back tilted up to get the *bevel edge* flat on the stone.

Practically all mechanics' knives with straight edges are sharpened on a flat oilstone, many of

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the thinner blades never being put on a grinder at all.

For sharpening ordinary knives, such as used in and around the home, the best device, as before stated, is a household Knife Sharpener. Because it sharpens so quickly and cannot be broken easily, the most perfect of these is the Norton Pike Kant-break Knife Sharpener.

It requires no skill and hardly any practice to get perfect results with this. Fig. 11 shows how to use it.

Holding it in the left hand with the point upward, the handle protects the hand so that one may swiftly sweep the blade downward, first on one side, then on the other, with the edge foremost. Hold the blade against the stone with the back of the blade slightly lifted to give the right angle on the bevel. Always start each stroke at the "heel" of the blade and, sweeping down diagonally, cover the entire length of the edge from heel to point in each stroke. Do not use much pressure.

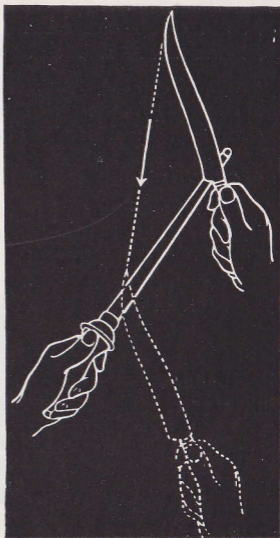


Fig. 11

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No one but a butcher should depend on a "steel"—and even he is forced to use it almost constantly to make it effective. A "steel" is only useful to add the last touch of keenness to a knife already extremely sharp.

### *To Sharpen Scissors*

The best way to make scissors or shears give first class service is to grind them on the Bevelrite grinder described on page 45. However, scissors can be touched up on almost any good quality stone with a flat surface. All that is necessary is to apply the blade so that the bevel lies accurately upon the face of the stone with the blade crossing the stone at right angles. Then draw the blade smartly across the stone from heel to point. Do not run the blade back and forth—start each stroke at the heel of the blade.

### *Pocket Knives*

These should be sharpened preferably on a medium or fine oilstone, or better yet, on a Pocket Knife Sharpener such as is referred to on page 32.

Apply the blade of a pocket knife to the stone with its back slightly tilted. Hold it obliquely across the face of the stone, and

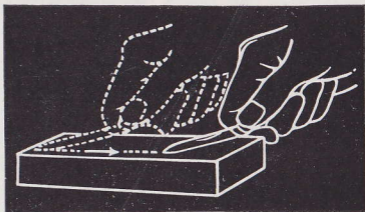


Fig. 12

smartly rub straight back and forth. (See Fig. 12.) Then reverse to the other side of the blade and

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repeat. With a *fine* oilstone, if the blade is sharpened thoroughly, there will be no perceptible wire edge—none at all, if it is finished on a Norton Pike Arkansas. If it is necessary to remove all trace of burr, this may be done by stropping the blade on the coarse side of a razor strop.

Many leading teachers of manual training recommend the Sloyd pattern knife for young pupils. This knife has a pronounced bevel extending midway to the back of the blade and is best sharpened by laying this bevel flat on the stone. To sharpen all the way back to the “heel” on both sides of the stone, it is recommended to sharpen one side of the blade first with the right hand, and then applying the blade to the left side of the stone using the left hand.

### *Scythes and Long Blades*

With blades like the scythe, sickle and others that are too large to be moved over the whetstone or oilstone, the blade is held firmly in the left hand and stroked along the edge with the stone—first on one side then on the other and always toward the point of the blade.

### *Augers and Gimlets*

Augers and auger-bits are often sharpened with a file. But to get a smooth edge, it is necessary to use, at least for finishing, an oilstone “slip.” The two parts that get dull are the “nicker” or scoring nib, A, and the cutting lip, B, in Fig. 13. The

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scoring nib is sharpened only from the *inside*. Otherwise it would become smaller than the body of the bit.

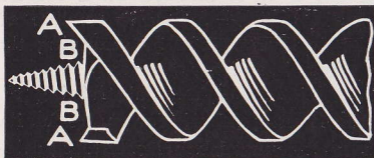


Fig. 13

The cutting lip should be sharpened from the lower side, care being taken to preserve the original angle. Norton Pike India stone No. 10 is especially shaped to get at the angles of an auger.

To restore a gimlet fix a piece of oak about  $1\frac{1}{4}$  inches thick in the vise and make a hole  $\frac{3}{4}$  inch deep in its top with the gimlet to be sharpened. Fill the hole with flour emery, adding a few drops of oil and then reinsert the gimlet and bore down into the wood until the point shows through. Repeat for a few minutes, adding fresh emery and oil. Then repeat the process, using this time a piece of soft pine and emery without the oil.

### **Lawn Mowers**

The Red Head Utility File described on page 39 is an excellent lawn mower sharpener. First, invert the mower. Then grasp the blade near the end with one hand and with the Utility File in the other hand, run it over the bevel back and forth, in an end to end direction being careful to follow the bevel already established. Most blades require but little touching up.

### **To Hone a Razor**

Hold the razor *perfectly* flat on the hone. The thick back takes care of the bevel. Lay the razor



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diagonally on the hone and draw it against the edge across the full length of the hone, using light pressure. Reverse the razor at each stroke, rolling it on the back, and repeat the stroke in the opposite direction. (See Fig. 14.)

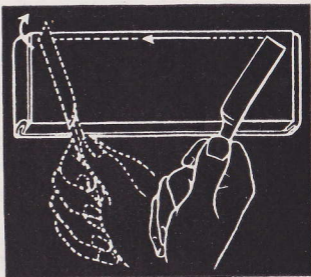


Fig. 14

Unless the razor is quite dull a few strokes will make it ready for the strop. Do not use the hone too freely. Beyond a certain point, the edge loses its velvety keenness. This is called "over-honing" and may be safely avoided by observing the rule "Use the hone less and the strop more."

### *Using the Strop*

Hold the blade perfectly flat on the strop and hold the strop as *taut* and *straight* as possible to prevent rounding the bevel. Draw the razor diagonally from heel to point along the length of the strop, and away from the edge instead of against it. Then roll the razor on its back to reverse it and repeat the stroke in the opposite direction. Be sure the entire length of the razor's edge is covered during each stroke.

In many ways the best solution of the razor edge problem for the amateur is the Norton Pike Strop-Hone. In this, as shown in Fig. 14, a splen-

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## HOW TO SHARPEN

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did hone is on one side and a high class strop on the other. The hone can be used dry and the strop cannot sag and round the razor's edge.

### *Safety Razor Blades*

With a blade holder and a good hone and strop, and by following the above directions, it is possible to obtain long and satisfactory service, sometimes from a single blade.

There are also many automatic blade sharpeners on the market, of which, the Norton Pike Stropper described on page 41 is probably the best example. This very practical device is giving the finest kind of service to hundreds of thousands of users.

The No. 81 Newshell Strop, illustrated on page 40, is also an exceptionally good blade sharpener. It is a "self-honing" strop, one side being filled with a very finely powdered abrasive. The stropping motion is employed on both the honing and finishing sides. With a very little practice it is possible to obtain many months of very wonderful service from a single blade.

### *Oilstones in the Machine Shop*

Many mechanics do not differentiate between ordinary stoning and oilstoning. While both operations follow the grinding of tools to produce smoother surfaces, oilstoning gives an ultra smooth surface due to the floating of the small particles of steel that are removed. The steel particles, in reality, constitute the burr which has been oilstoned away. The use of oil prevents the particles imbedding in the stone; and, as a consequence, the cutting crystals are left free to do their best work.

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## HOW TO SHARPEN

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The oilstoning of metal cutting tools is of greater importance than ever in these days of extremely high speed cutting tools. It serves two distinct purposes. First it means much longer life between trips to the grinding wheel; and, second it produces a smoother finish.

One great difficulty of high speed steel is the tendency of the surface to crater just back of the cutting edge. This cratering is caused by excessive frictional load. The friction can be materially reduced by oilstoning such surfaces as are subject to cratering, and thereby prolonging the life of the cutting edge. This is a distinct advantage on lathe tools, milling cutters, twist drills, reamers, and threading tools like taps and die chasers.

Oilstoning is a very profitable operation on opening die chasers on turret lathes, both hand and automatic. Also, it requires only a short oilstoning operation to remove the slight burr which occurs in grinding thread tools, and this means that a much smoother thread can be cut.

Norton Pike India Oilstones are used almost universally in the large machine shops of the world. An oilstone that wears out quickly, or one that grooves easily, has no place in modern industry. That is why Norton Pike India is so widely used in shops where the most modern practice prevails.



## *How to Care for Oilstones*



Like anything else, an oilstone can be ruined by wrong treatment and lack of care.

There are three objects to be attained in taking good care of an oilstone: first, to retain the original life and sharpness of its grit; second, to keep its surface flat and even; third, to prevent its glazing.

To retain the original freshness of the stone, it should be kept clean and moist. To let an oilstone remain dry a long time, or expose it to the air, tends to harden it. A new stone should be soaked in oil for several days before using (this with the exception of Norton Pike India as already explained). If kept in a dry place (most of them are) it should be kept in a box with closed cover, and a few drops of fresh, clean oil left on it.

To keep the surface of an oilstone flat and even simply requires care in using. Tools should be sharpened on the edge of a stone as well as in the middle to prevent wearing down unevenly, and the stone should be turned end for end occasionally.

To restore an even, flat surface grind the oilstone on the side of a grindstone, or rub it down with sandstone or an emery brick.

To prevent a stone from glazing requires merely the proper use of oil or water.

The purpose of using either oil or water on a sharpening stone is to float the particles of steel that are cut away from the tool, thus preventing them from filling in between the crystals and causing the stone to glaze.

The chief exceptions to this are the scythestone and the household "Knife Sharpener." These are always of coarse grit, and the pressure exerted on

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## HOW TO SHARPEN

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them is light as compared with that on the flat surface of an oilstone. For this reason the steel particles are not ground into the stone and no oil or water is needed.

All coarse-grained Natural stones should be used with water. Use plenty of it.

On medium and fine-grained Natural stones, such as Norton Pike Arkansas and Norton Pike Washita, and on *all Artificial* stones, oil should be used always, as water is not thick enough to keep the steel out of the pores.

The most satisfactory oil to prevent the glazing of oilstones is Norton Pike Oil. Though clear and thin, it has sufficient body to float the particles of steel removed from a tool while honing or sharpening. This prevents these metal particles being ground into the stone. Norton Pike Oil is free from acid, is non-gumming and non-drying. Do not use heavy oils or grease which fill up the pores of the stone and take away its free-cutting qualities. In case of emergency—no Norton Pike Oil available—Kerosene can be used.

To further prevent glazing, the dirty oil should ALWAYS be *wiped off the stone thoroughly* as soon as possible after using it. This is very important, for if left on the stone, the oil dries in, carrying the steel dust with it. Cotton waste is one of the best things to clean a stone with, and is nearly always to be found in a shop. Some carpenters use shavings, but they are very apt to leave the stone full of dust. A common clean rag would be better.

If the stone does become glazed or gummed up, a good cleaning with gasoline or ammonia will usually restore its cutting qualities, but if it does not, then scour the stone with loose emery or sandpaper fastened to a perfectly smooth board.

## HOW TO SHARPEN



### *India Bench Stones*

(Review pages five to eight.)

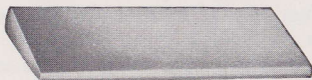
Old No.	New Numbers			Size	Each
	Coarse	Medium	Fine		
0	CB 8	MB 8	FB 8	8 x 2 x 1"	\$1.50
1½	CB 7	MB 7	FB 7	7 x 2 x 1"	1.25
29	CB 6	MB 6	FB 6	6 x 2 x 1"	1.15
3	CB24	MB24	FB24	4 x 1 x ½"	0.55



### *India Combination*

A Coarse and Fine grit India, vitrified (not glued) together, giving the distinct advantage of two stones in one.

Old No.	New Numbers	Size	Each
0	IB8	8 x 2 x 1"	\$1.75
1½	IB7	7 x 2 x 1"	1.50
29	IB6	6 x 2 x 1"	1.25
..	IB134	4 x 1¾ x ⅝"	0.85

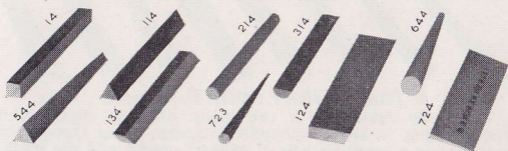


### *India Round Edge Slips*

Widely used for putting an oilstoned finish on tools and knives with curved cutting edges.

Old No.	New Numbers			Size	Each
	Coarse	Medium	Fine		
15	CS24	MS24	FS24	4½ x 1¾ x ¼ x ⅛"	\$0.65
14	CS34	MS34	FS34	4½ x 1¾ x ⅜ x ⅛"	0.65
13	CS44	MS44	FS44	4½ x 1¾ x ½ x ⅛"	0.65

# HOW TO SHARPEN



## India Files

Made in many different shapes and sizes for various classes of work like stoning dies, cleaning and polishing moulds, lapping or reaming round or square holes, in fact, a thousand and one jobs that come up daily in every class of industry.

Old No.	New Numbers			Shape	Size	Each
	Coarse	Medium	Fine			
6	CF 14	MF 14	FF 14	Square	4 x 1/4"	\$0.40
5 1/2	CF 24	MF 24	FF 24	"	4 x 5/16"	0.45
5	CF 34	MF 34	FF 34	"	4 x 3/8"	0.45
4	CF 44	MF 44	FF 44	"	4 x 1/2"	0.45
9	CF114	MF114	FF114	Triangle	4 x 1/4"	0.50
8 1/2	CF124	MF124	FF124	"	4 x 5/16"	0.55
8	CF134	MF134	FF134	"	4 x 3/8"	0.55
7	CF144	MF144	FF144	"	4 x 1/2"	0.55
12	CF214	MF214	FF214	Round	4 x 1/4"	0.60
11 1/2	CF224	MF224	FF224	"	4 x 5/16"	0.65
11	CF234	MF234	FF234	"	4 x 3/8"	0.65
10	CF244	MF244	FF244	"	4 x 1/2"	0.65
73	CF314	MF314	FF314	Half Round	4 x 1/4"	0.50
..	CF324	MF324	FF324	"	4 x 5/16"	0.55
74	CF334	MF334	FF334	"	4 x 3/8"	0.55
75	CF344	MF344	FF344	"	4 x 1/2"	0.55
58	CF644	MF644	FF644	Taper Round	4x1/2x1/4"	0.75
57	CF544	MF544	FF544	Taper Tria.	4x1/2x1/4"	0.75
26	CT134	MT134	FT134	Diamond	4x5/16x5/16"	0.90
27	CF723	MF723	FF723	Point	3x5/16" Base	0.90
28	CF724	MF724	FF724	Knife Blade	4x1x1/8" Back	0.70
25	CT124	MT124	FT124	Reamer	4 1/2x1x5/16"	0.50
56	CT125	MT125	FT125	Reamer	5x1x5/16"	0.50

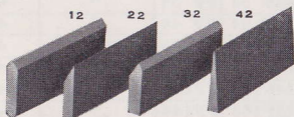
## HOW TO SHARPEN



### *India Silversmiths' Stones*

Originally designed for the many different shapes and sizes of dies in the silversmith industry, these stones are now used in a great variety of general mould and die work.

Old No.	New Numbers			Size	Each
	Coarse	Medium	Fine		
45	CF414	MF414	FF414	$4x\frac{5}{16}x\frac{3}{16}x\frac{5}{16}x\frac{1}{16}$ "	\$0.75
48	CF424	MF424	FF424	$4x\frac{3}{8}x\frac{3}{16}x\frac{1}{8}x\frac{1}{16}$ "	0.75
50	CF433	MF433	FF433	$3\frac{1}{2}x\frac{7}{16}x\frac{3}{16}$ "	0.75
49	CF434	MF434	FF434	$4x\frac{7}{16}x\frac{3}{16}x\frac{1}{8}$ "	0.75
43	CF444	MF444	FF444	$4x\frac{1}{2}x\frac{1}{16}$ "	0.75
47	CF454	MF454	FF454	$4x\frac{1}{2}x\frac{3}{16}x\frac{3}{16}x\frac{1}{16}$ "	0.75
46	CF464	MF464	FF464	$4x\frac{1}{2}x\frac{1}{4}x\frac{5}{16}x\frac{1}{8}$ "	0.75
44	CF474	MF474	FF474	$4x\frac{1}{2}x\frac{1}{4}x\frac{5}{16}x\frac{1}{8}$ "	0.75



### *India Carving Tool Slips*

Special shapes designed for producing an oilstoned finish on various shaped knives and tools used by carvers of wood and ivory. If used in connection with Arkansas Carving Tool Slips almost any desired edge may be obtained.

Old No.	New Number	Size	Each
36	MS12	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	\$0.50
37	MS22	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50
38	MS32	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50
39	MS42	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50

### *Arkansas Carving Tool Slips*

No.	Size	Each
AS12	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	\$0.50
AS22	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50
AS32	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50
AS42	$2\frac{1}{4}x\frac{7}{8}x\frac{3}{16}$ "	0.50



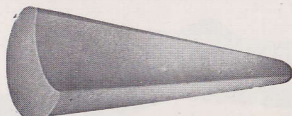
## HOW TO SHARPEN



### *India Lastmakers' Stone*

Used by lastmakers and in woodworking plants. Also valuable for cutting dies in glove shops and shoe factories.

Old No.	New Numbers			Size	Each
	Coarse	Medium	Fine		
16	CT48	MT48	FT48	8 x 5/8 x 5/8"	\$1.00



### *India Special Gouge Slip*

Excellent for oilstoning inside or outside curved surfaces. Used extensively in shoe and glove shops and woodturning factories. Made in Special Fine grit only.

Old No.	New No.	Size	Each
21	FS76	6 x 2 x 1 x 1/2 x 3/8"	\$1.50



### *India Engravers' Pencil*

A Medium and Fine India file mounted in wooden case or pencil. Used by engravers and for marking metals.

Old No. 19	New No. IT17	Price \$0.65 ea.
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### *India Skiving Knife Stone*

Created to remove burr from knives used in Amazeen skiving machines, but found useful for many operations.

Old No. 42	New No. MT34	Size 4x1x1/4"	Price \$0.65 ea.
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## HOW TO SHARPEN



### *India Auger Bit Stone*

Right shape for auger bits. Also for contact points of vibrator coils and make and break mechanism of magnetos.

Old No.	New Numbers		Size	Each
	Coarse	Medium		
53	CT10	MT10	4" long	\$0.65



### *India Pocket Stone*

Puts a perfect, keen edge on pocket and pen knives, ink scratchers, scissors and small tools. Every man who takes pride in owning a sharp pocket knife and every woman who enjoys smooth, easy-cutting scissors should have one of these stones. Made in Special Fine grit.

Old No. 61	New No. FP13	Size 3x7/8x3/8"	Price \$0.20 ea
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### *Norton Pike Axe Stone*

An axe is doubly valuable if kept in keen cutting condition. The coarse side of this round combination stone produces a sharp edge in a few minutes, while the fine side will give a smooth, finished edge. A superior product for wood choppers, hunters, fishermen and campers.

No. JT3	Size 3 x 5/8"	Price \$0.60 each
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## HOW TO SHARPEN

### *India Oilstone Wheels*

For all kinds of small lathes used for fine grinding and sharpening, such as dentists, jewelers and others use in their regular work. Made in *coarse*, *medium* or *fine* grits. These wheels are not carried in stock, but are made up special on receipt of order. From five to six weeks required for delivery.

Diameter Inches	THICKNESS OF WHEEL IN INCHES					
	¼	½	¾	1	1½	2
1	\$ .90	\$1.10	\$1.25	\$1.45	\$1.80	\$2.15
1½	1.10	1.45	1.60	1.80	2.15	2.50
2	1.25	1.80	2.15	2.50	2.90	3.25
2½	1.45	2.15	2.50	2.90	3.25	3.80
3	1.80	2.50	3.05	3.60	4.05	4.50
3½	2.15	2.90	3.60	4.30	4.95	5.40
4	2.50	3.25	3.95	4.70	5.40	6.10
4½	2.90	3.60	4.30	5.05	5.75	6.65
5	3.25	3.95	4.70	5.40	6.10	7.00
6	3.80	4.50	5.20	5.75	8.30	10.60
7		5.85	7.20	8.55	10.35	13.65
8		7.00	8.10	10.10	12.60	16.20
9		8.30	9.60	12.15	16.00	21.60
10		9.90	11.25	13.95	18.70	25.20
12		12.60	15.30	19.80	27.00	31.80

Wheels between above diameters or thicknesses take price of next larger size.

Special shaped faces or special grits subject to special prices, quoted on application.

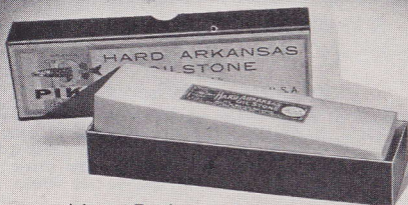
Extra Fine grade and Surgeons Hone material also supplied. Quotation on request.

India Wheels not subject to return or cancellation.

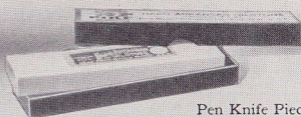


### *Arkansas Wheels*

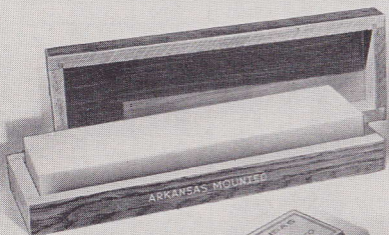
Where the very finest edges or a beautiful oilstone finish are required Arkansas Wheels are a necessity. Full information on such wheels will be supplied on request.



Arkansas Bench



Pen Knife Piece



Arkansas Mounted



Round Edge Slip



Lily White Washita Bench



## Natural Oilstones



Arkansas is the one stone which is fine enough to remove the last trace of burr from the cutting edge. Hard Arkansas is used by surgeons, engravers, wood and ivory carvers, dentists and all users of fine edged tools. Soft Arkansas is preferred by pattern makers and workers in hard wood. Lily White Washita produces a keen, long-lasting edge on carpenters' tools. A few of the best selling sizes of the above stones are given below.

### Bench Stones

Size About	6 x 2"	7 x 2"	8 x 2"
HARD each	HB6 \$6.00	HB7 \$7.00	HB8 \$8.00
SOFT each	SB6 2.40	SB7 2.80	SB8 3.20
LILY WHITE ea.	LB6 1.20	LB7 1.40	LB8 1.60

### Mounted Stones

Stone Size About	6 x 2"	7 x 2"	8 x 2"
HARD each	HM6 \$4.20	HM7 \$4.90	HM8 \$5.60
SOFT each	SM6 2.20	SM7 2.60	SM8 3.00
LILY WHITE ea.	LM6 1.40	LM7 1.60	LM8 1.80

### Round Edge Slips

Length About	3 x 1 $\frac{3}{4}$ - 2"	4 x 1 $\frac{3}{4}$ - 2"	5 x 1 $\frac{3}{4}$ - 2"
HARD each	HS3 \$1.20	HS4 \$1.60	HS5 \$2.00
SOFT each	SS3 .60	SS4 .80	SS5 1.00
LILY WHITE ea.	LS3 .30	LS4 .40	LS5 .50

### Pen Knife Pieces

Length About	3"	4"	5"
HARD each	HB13 \$.60	HB14 \$.80	HB15 \$1.00
SOFT each	SB13 .30	SB14 .40	SB15 .50
LILY WHITE ea.	LB13 .15	LB14 .20	LB15 .25

# MULTI-OILSTONES



Three-Stone Model



Multi-Oilstone Oil



Two-Stone Model



## *Multi-Oilstones*

A complete Sharpening Service for meat markets, hotels, carpenter and cabinet shops, cutlery and instrument makers and every sharpening need in the home.

Exceptional features are: stone in use is elevated preventing cuts and grazed knuckles — other stones resting in a bath of oil; grit changes made instantly; stones are self-leveling and may be reversed if worn; impossible to draw temper of knives and tools. Heavy non-skid base insures rigidity. Enameled case is finely finished. Working parts heavily nickeled.

### *Three-Stone Model No. IM311\**

Three genuine Norton Pike Oilstones vitrified and factory saturated with oil. Coarse, medium and fine grits. Large size  $11\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{2}$ ". One quart oil supplied. Price \$12.80 each.

### *Two-Stone Model No. IM211\**

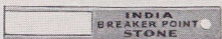
Two stones, coarse and fine grits,  $11\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{2}$ ". One 24 oz. can of oil supplied. Price \$9.60 each.

### *Multi-Oilstone Oil*

Perfectly pure, fully meeting U. S. Pharmacopœia specifications. Prevents glazing by floating particles of steel removed from edge when honing. Especially necessary where knives and tools come in contact with food products.

No. XB12 Quart can \$0.75 each.

\*Prices on models equipped wholly or in part with Arkansas or Washita stones quoted on request.



India Breaker Point Stone



Red Head  
Utility File



Norton Pike Oil



Kantbreak Knife  
Sharpener



Sportsman Stone





### ***India Breaker Point Stone No. IC2***

Will keep the breaker points of the ignition clean and bright. Both points cleaned at once, the parallel surfaces of the stone insuring perfect alignment. Price \$0.25.

### ***Red Head Utility File No. JD2***

Better than a steel file for sharpening Mower Sections, Lawn Mowers, Spades, Shovels and other heavy edge tools. Handy for smoothing rough metals. A real time and money saver on the farm and in machine and blacksmith shops. Price \$1.00

### ***Norton Pike Oil No. XB1***

The best oil for oilstones. By floating particles of steel removed from a tool while being sharpened it prevents glazing. Also a good household oil. Price in handy 3-oz. can \$0.30.

### ***Kantbreak Knife Sharpener No. KPT2***

Superior to a steel for sharpening carving and kitchen knives. A few strokes give a keen edge. Rubber mounted and strengthened by steel rod running its entire length. Price \$0.50.

### ***Sportsman Stone No. WIP-13***

All lovers of outdoor sports need one. Indispensable around camp for sharpening hunting and fishing knives and axes and for repointing fish hooks, gaffs, etc. Price in leather case \$0.50.



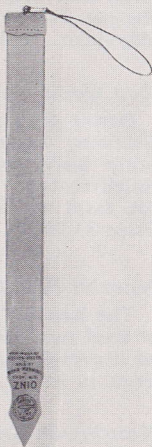
Ezy Edge Razor Hone



Pike Stropper

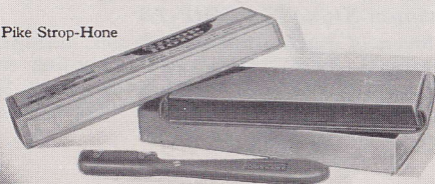


No. 81 Newshell



ZN 10  
Auto Strop  
Replacement

Pike Strop-Hone





## *Stropping and Honing Devices*



### *Ezy Edge Razor Hone No. VR2*

The first successful artificial hone made in America. Has given satisfaction to thousands of users for thirty years. \$0.75 each.

### *Norton Pike Strop No. ZP1*

This strop has a scientific wiggle which permits the user to obtain that much desired barber's diagonal stroke on safety razor blades. Fits all popular blades. \$1.00 each.

### *No. 81 Newshell Strop No. ZN81*

A self-honing strop with holder for safety blades carried in convenient pocket in handle. A few strokes on the honing side, followed by a number of strokes on the finishing side will keep the blade in shaving condition indefinitely. \$1.00 each.

### *Norton Pike No. ZN10*

The finest replacement strop on the market for the Auto Strop razor. Use both sides. The back or honing surface quickly brings the dullest blade to an edge. Front surface beautifully finished to produce a smooth shaving edge. Price \$0.35 each.

### *Norton Pike Strop-Hone No. VR4*

Whether you use an ordinary razor or a safety the Strop-Hone will make every shave as cool and comfortable as the best shave you ever had. The hone can be used dry and the strop is a dandy. A safety blade holder included in each box.

\$1.00 each.

# SCYTHESTONES



Made of Norton CRYSTOLON Abrasive



Made of Norton ALUNDUM Abrasive



Indian Pond



Black Diamond



## Norton Pike Scythestones



Scythestones are used primarily to keep scythes in keen cutting condition, but they also make excellent sharpeners for many knives and tools around the home, farm and garden. Handy and inexpensive, most householders would find it worth while to have several of these quick and easy edge makers in convenient spots in the kitchen, garage and tool kit.

### *No. TJ2 --- Norton CRYSTOLON Abrasive*

Rapid cutting stones (carbide of silicon) which produce keen edges with little effort. Designed for those who prefer a light stone. Round oval in shape. Size  $10 \times 1 \times \frac{5}{8}$ ". Price \$0.25 each.

### *No. TJ3*

Same as TJ2 except heavier and rectangular in shape with rounded edges. Size  $10 \times 1\frac{1}{4} \times \frac{3}{4}$ ". Price \$0.30 each.

### *No. TJ4*

Same as above except longer, more suitable for heavy work. Oval in shape. Size  $12 \times 1\frac{1}{4} \times \frac{3}{4}$ ". Price \$0.35 each.

### *No. TD1 --- Norton ALUNDUM Abrasive*

An Aluminum Oxide product, famous for its long wear and fast cutting. Same size and shape as TJ3 above. Price \$0.25 each.

### *No. TD2*

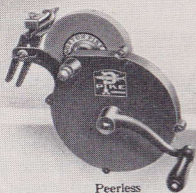
Same as TD1 except made in the popular flat oval shape. Size  $10 \times 1\frac{5}{16} \times \frac{1}{2}$ ". Price \$0.20 each.

### *No. TN304 Black Diamond*

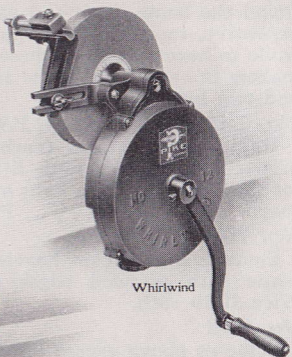
A fine natural Vermont grit which gives a long-lasting edge suitable for tough, wiry grass. Size about  $10 \times 1\frac{1}{4} \times \frac{1}{2}$ ". Price \$0.25 each.

### *No. TN302 Indian Pond*

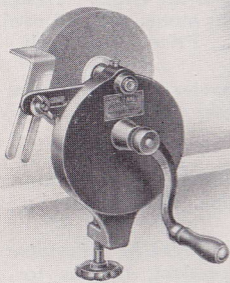
This brand has been famous for more than a century. Produces a medium coarse edge. Size about  $10 \times 1\frac{1}{4} \times \frac{1}{2}$ ". Price \$0.25 each.



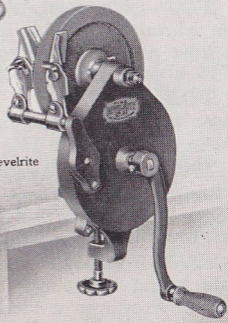
Peerless



Whirlwind



Handy Andy



Bevelrite



## *Hand Tool Grinders*



### *Peerless Grinder No. RH9*

A very powerful, high speed, easy running machine. Has just the combination of speed and power to give best results. Equipped with the Norton Pike Bevel Guide which assures a correct bevel every time. Price \$12.00 each.

### *Whirlwind Grinder No. RH12*

High speed and power make this grinder suitable for the heavy, hard and quick grinding necessary on railway construction, quarrying, mining and similar work. Compound gears develop a periphery speed of 5000 feet per minute. Price \$18.00 each.

### *Handy Andy Grinder*

Smooth running, strongly built, hand driven machines which will give years of satisfactory service. Unsurpassed for those little jobs of grinding and sharpening which crop up daily around the home and garage. The larger sizes are just right for the carpenter or general repairman. Has machine cut, helical gears and genuine vitrified wheels. Made in four sizes as follows:

No. RD1 with 4 x 1" Grinding Wheel \$2.50 each

No. RD2 with 5 x 1" Grinding Wheel \$3.00 each

No. RD3 with 6 x 1" Grinding Wheel \$5.25 each

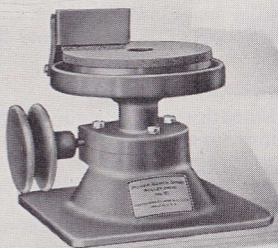
No. RD4 with 7 x 1" Grinding Wheel \$5.75 each

### *Bevelrite Grinder No. RH21*

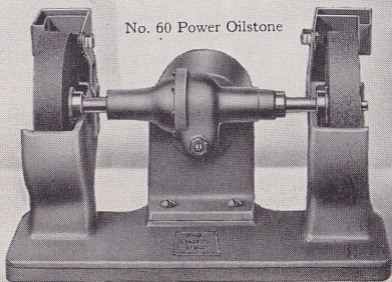
The machine that makes all men masters of the grinding art. Full directions for obtaining correct bevel on any knife or tool supplied with each machine. So easy that even the inexperienced user can learn after a little practice to grind scientifically perfect edges. A desirable outfit for butchers, meat cutters, hotels, restaurants, carpenters, plumbers, etc. Price \$10.00 each.



No. 50 Power  
Bench Stone



No. 51 Pulley Drive  
Bench Stone



No. 60 Power Oilstone





## *Norton Pike Powered Oilstones*



New, electrically driven and decidedly practical devices for putting an oilstoned finish on tools. All Norton Pike Powered Oilstones are portable and equipped with Universal motors operating from any electric light socket. They are also equipped with gravity oil feeds with felt wipers which supply just the right amount of oil.

### *Power Bench Stone No. RP50*

This machine will handle all tools with broad, flat edges like chisels, plane irons, box and bearing scrapers, moulder knives, and machinists scrapers. It is regularly equipped with one Medium India Oilstone. Other grades of India, Arkansas or Washita Stones can be supplied. Price \$25.00.

### *Power Bench Stone No. RP51*

A machine very similar to the No. 50 except it is smaller and is equipped with pulley drive instead of powered by an electric motor. A very wonderful machine for the owners of home work shops. Price \$7.50.

### *Power Oilstone No. RP60*

Designed to put an oilstoned finish on a large variety of cutting tools, the edges of which are of such shape or so located that they cannot be oilstoned on a regular bench stone. A few operations which may be mentioned are the oilstoning of taps, cutter heads, clicking dies, hollow mills, forming tools, lathe tools and many others. Regularly equipped with one Coarse and one Fine India Oilstone. Price \$25.00.

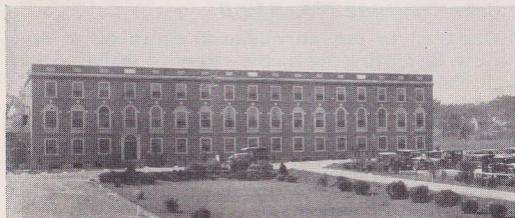
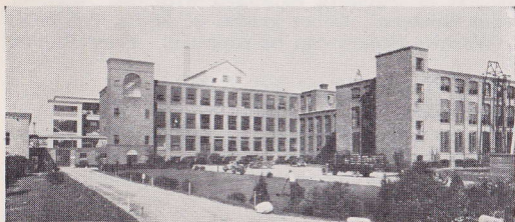
# BEHR-MANNING CORPORATION

Troy, N. Y. and Branches

*Sales Representatives in U. S. A.*  
for NORTON PIKE PRODUCTS

THE Behr-Manning Corporation have been manufacturers of Quality Abrasive Papers and Cloths since 1872. The factories, laboratories and executive offices in Troy, N. Y., as pictured below, occupy about six acres of land and comprise seven and a half acres of floor space.

Some of their principal products, of interest to manual training and vocational schools, and carried in fifteen branches and by jobbers and dealers everywhere, are illustrated and briefly described in the following pages.



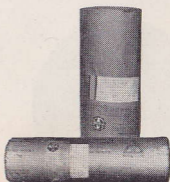
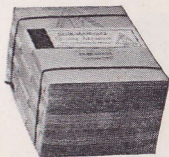
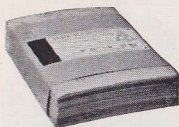
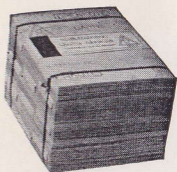
**GARNET** Papers and cloths have been standard for wood-working in the large industrial plants for many years. They are coated with real garnet ore from the famous mines of the Adirondack region of New York State and have entirely superseded the old-fashioned "sandpaper" in actual industrial use.

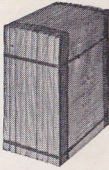
Behr-Manning Garnet Products include Paper in sheets for hand sanding, Finishing Paper in sheets for fine cabinet work, and both Paper and Cloth in rolls for belts and drum covers for machine use. These papers and cloths are available in a large variety of grit numbers and sizes.

**ADALOX** is an electric furnace abrasive originally developed for metal cutting that has been adopted in many woodworking plants where on continuous, severe operations actual tests have shown its economy to be greater than that of garnet on the same work.

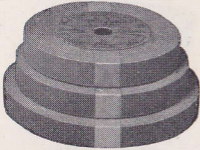
Its slightly higher cost is offset by its longer working life and faster production.

Adalox is available in all the grit numbers, forms and sizes applicable to woodworking operations.





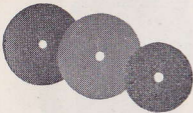
**METALITE** is an electric furnace mineral that has replaced emery as a metal working abrasive. Faster cutting, longer lasting, and tougher, it is available in the forms shown on this page.



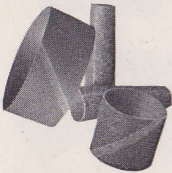
**HANDY ROLLS OF METALITE CLOTH** provide the workman with clean-cut, straight edged strips from which he may tear off exactly the length required for the job.



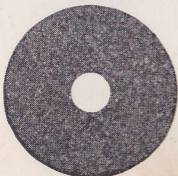
**METALITE CLOTH X WEIGHT** in rolls is used for making sanding belts. The strong X weight drill cloth stands the hard usage of machine sanding.



**METALITE SLOTTED FIBRE COMBINATION DISCS** increase the efficiency of any portable disc sander.



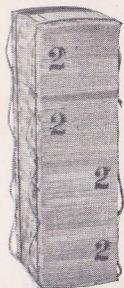
**METALITE CLOTH BANDS and CONES** are joined with the famous Uniflow Joint which does not jump and bump as it passes the work. Made to fit all portable sanding machines.



**METALITE "R" WEIGHT DISCS** are cemented to steel faceplates and used for heavy metal grinding. They are made in many standard and special sizes.

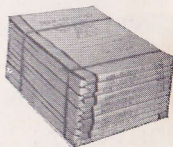
*Speed-wet*, the 100 % Water-proof Sandpaper, is the accepted standard for fine water sanding throughout the automotive and metal furniture industries wherever an extremely fine finish is required.

Its coating of silicon carbide grain is particularly sharp and fast cutting, but has a "velvety" feel that indicates the preparation of a smooth, scratchless surface.



**FLINT PAPER** is used for light scuffing of wood and paint coats where it is not necessary to remove much stock.

**EMERY CLOTH** is the machinist's smoothing and polishing cloth.



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